

Ranking Determinations Formulae

The determination of tiers for the allocation of federal School Improvement Grants required that a subgroup of schools based on Title I and identification status be ranked by four indicators: Math Proficiency, Reading Proficiency, Math Progress, and Reading Progress. In order to best align the tier designations to existing accountability results, as well as to insure that assessment results included in the calculations reflect students enrolled at schools for a full year, scores for Adequate Yearly Progress (AYP) were used. Using the existing AYP determinations also enabled the use of confidence intervals using similar methodology to that used in AYP.

Calculation of Proficiency Scores

Proficiency scores for math and reading were calculated from the 2009 AYP index for the All Students group in each school. The 2009 AYP decisions are based on the fall 2008 NECAP assessments. In order to assure the greatest level of confidence in that score, we used the same 99 percent confidence band as described on page 9 of the Accountability Operations Manual (see link, below). For AYP, the confidence band is applied around the Annual Measurable Objective (AMO) goal. To apply this confidence band to one around the index score, this formula is used:

$$proficiencyScore = AYP\ index + (AMO - LCB)$$

Where:

AYP index is the school's All Students index from column 12 of the AYP report.

AMO is the Annual Measurable Object from column 10 of the AYP report.

LCB is the lower confidence boundary from column 13 of the AYP report.

Example:

$$AYP\ index = 433$$

$$AMO = 435$$

$$LCB = 422$$

$$proficiencyScore = 433 + (435 - 422) = 446$$

This is equivalent to:

$$proficiencyScore = Y + Z_{\alpha} \sqrt{\frac{s^2}{n}}$$

Where:

Y is the index for All Students on the 2009 AYP report (column 12).

n is the number of students in the index from the 2009 AYP report (column 11).

*s*² is the estimate of variance reported on page 9 of the Accountability Operations Manual.

*Z*_α is 2.3268.

Calculation of Progress Scores

Progress scores for math and reading reflect the increase in the All Students group AYP index score over time. A 99 percent confidence band is generated around this increase. To apply this confidence band to one around the increase in the index score, this formula is used:

$$progressScore = (Y_2 - Y_1) + Z_{\alpha} s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

Where:

Y_1 is the All Students AYP index (column 12) for the baseline year (2006 for elementary schools, 2008 for all other schools).

Y_2 is the All Students AYP index (column 12) for the most recent AYP year (2009)

n_1 and n_2 are the number of students in the AYP indexes (column 11).

s_p is the estimated pooled variance, defined as $\sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{(n_1 + n_2 - 2)}}$ where s_1^2 and s_2^2

are the variance estimates from page 9 of the Accountability Operations Manual for the school configuration and year in question.

Z_α is 2.3268.

Example:

Y_2 , 2009 (Reading) = 433

Y_1 , 2006 (Reading) = 395

n_2 , 2009 = 350

n_1 , 2006 = 345

$s_2^2 = 11451$

$s_1^2 = 19039$

$$progressScore = (433 - 395) + 2.3268 \sqrt{\frac{(345 - 1) * 19039 + (350 - 1) * 11451}{(345 + 350 - 2)}} \sqrt{\frac{1}{345} + \frac{1}{350}} = 59.78$$

or 60

Rankings

After each of the four indicators is calculated, the schools are ranked by the indicator score. For example, if 25 schools have a reading proficiency score lower than 446, the school above would have a rank of 26 for reading proficiency. The ranking from each of the four indicators are added together to create a combined ranking score.

Final Rankings

Schools are ranked according to their combined ranking scores. The lowest five schools eligible for Tier I are determined to be Tier I schools, while all other schools eligible for Tier I are determined to be Tier III schools. The lowest five schools eligible for Tier II are determined to be Tier II schools.

Please note

Adequate Yearly Progress reports for all school may be found at:

http://education.vermont.gov/new/html/pgm_accountability/ayp/public_schools_A_D.html

The Accountability Operations Manual may be found at:

http://education.vermont.gov/new/html/pgm_accountability.html#ops_manual

For further information regarding the Tier I, Tier II and Tier III school designation, see the companion document.